

JOANNA COLE & BRUCE DEGEN

# The Magic School Bus

## Inside the Earth



SCHOLASTIC



# The Magic School Bus

## Inside the Earth



TWSI







# **The Magic School Bus**

## **Inside the Earth**

**By Joanna Cole**  
**Illustrated by Bruce Degen**



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IT'S YOUR TURN TO  
BE THE ANT MONITOR,  
ARNOLD

THE ANT  
MONITOR?!

IS IT ALWAYS  
LIKE THIS IN  
MS. FRIZZLE'S  
CLASS?

YOU'LL GET  
USED TO IT.

BEEHIVE

PAPER WASP  
NEST

Ant Farm

Ant Food

MOUSE HOLE

OWL'S  
Nest

NEW  
KID





In Ms. Frizzle's class,  
we had been learning about  
animals' homes  
for almost a month.  
We were pretty tired of it.  
So everyone was happy  
when Ms. Frizzle announced,  
"Today we start something new."





CHALLENGE OF THE WEEK:  
WHICH ONE IS THE EARTH?



1.



2.



3.

DON'T YOU OFTEN  
WONDER WHAT IS  
INSIDE THE EARTH?

"We are going to study about our earth!" said Ms. Frizzle. She put us to work writing reports about earth science. "And for homework," she said, "each person must find a rock and bring it to school."

NOT OFTEN.



But the next day,  
almost everyone had  
some excuse.

I COULDN'T FIND  
ANY ROCKS.

I FOUND ONE,  
BUT MY DOG  
ATE IT.

YOUR DOG  
ATE A ROCK?



WHERE DO ROCKS  
COME FROM? by Wanda

Most of the solid  
part of the earth is  
made of great masses  
of rock.

The small rocks that  
we collect are just  
pieces that broke off  
from these huge masses.





A yellow school bus with a smiling face, looking at a boy in a red shirt. The bus has large eyes and a wide smile. The boy is wearing a red shirt with a white pattern. They are standing in front of a green fence and trees.

IT IS TOO  
A ROCK!

YOU CHIPPED THIS  
OFF THE SIDEWALK,  
DIDN'T YOU, WANDA?



ALEX

MY ROCK  
QUARTZITE

PHIL



"I guess we'll have to go on a field trip and collect rocks," said Ms. Frizzle.

ARNOLD, THAT LOOKS LIKE STYROFOAM TO ME.

IT COULD BE A STALE CUPCAKE.

YEAH, COVERED WITH DIRT.

YOU ACTUALLY TOUCHED THIS, ARNOLD?

WHAT ARE ROCKS MADE OF?  
by Tim

Rocks are made of minerals. Sometimes you see tiny specks of different colors in a rock. Sometimes you see shiny specks. These different specks are the different minerals that make up the rock.





You never know  
what will happen  
on a trip with Ms. Frizzle.  
Her new dress  
was a trip in itself.  
At first the old school bus  
wouldn't start.  
But finally we were on our way.

I CAN'T BELIEVE  
MS. FRIZZLE  
DRESSES LIKE THAT.

YOU'LL GET  
USED TO IT.





When we came to the field,  
all the kids wanted  
to get out of the bus.  
But suddenly,  
the bus began to spin like a top.  
That sort of thing doesn't happen  
on most class trips.

FASTEN THOSE  
SEAT BELTS,  
CHILDREN.

MS. FRIZZLE,  
WHEN CAN WE  
COLLECT ROCKS?

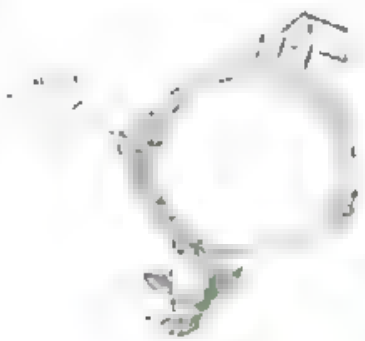
I'M GETTING  
DIZZY.





THE EARTH'S CRUST  
by John

- The outside of the earth is a shell of hard rock and soil.
- This shell is called the earth's crust.



THIS CRUST IS  
AS HARD AS  
A ROCK, TOO.

THIS ISN'T EXACTLY EASY.

AT LEAST WE'RE  
MISSING SPELLING.

When the spinning finally stopped,  
some things had changed.  
We all had on new clothes.  
The bus had turned into  
a steam shovel.  
And there were shovels and picks  
for every kid in the class.  
"Start digging!"  
yelled Ms. Frizzle.  
And we began making a huge hole  
right in the middle of the field.



FIRST, WE WILL DIG  
THROUGH THE EARTH'S  
CRUST. THE TOP LAYER  
OF THE CRUST IS SOIL.

IT LOOKS LIKE  
DIRT TO ME.

DIRT IS ANOTHER  
WORD FOR SOIL.

OH, GREAT! NOW SHE  
CAN READ MY MIND!

## WHAT IS SOIL?

by Florrie

Soil is made of ground-up  
rock, mixed with clay, bits  
of dead leaves, sticks,  
and small pebbles.

Without rock there  
would be no soil for  
plants and trees to  
grow in.



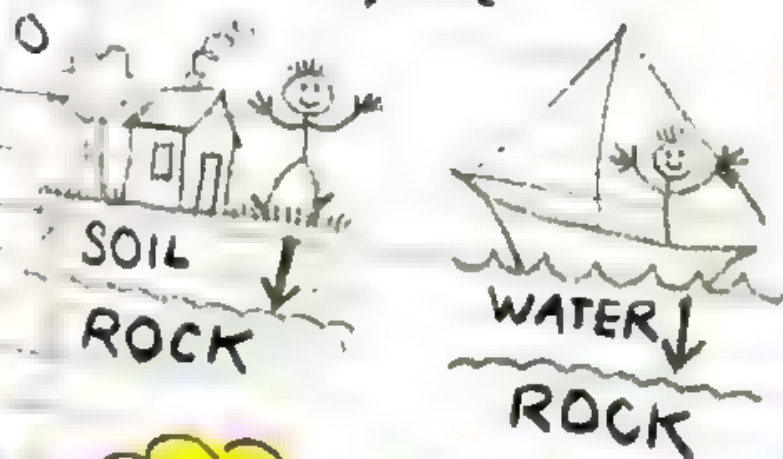


THERE IS ALWAYS  
ROCK UNDER YOU  
by Shirley

Most of the rock in  
the earth's crust is  
covered with soil or  
water. But if you dig  
deep enough, you  
will find the rock.

Wherever you are  
standing or walking  
or floating on earth...

There is rock  
under you.



Before long — CLUNK! — we hit rock.  
The Friz handed out jackhammers.  
We began to break  
through the hard rock.

I'M NOT USED TO  
MS. FRIZZLE YET!

GIVE IT TIME.





"Hey, these rocks have stripes,"  
said a kid.  
Ms. Frizzle explained that  
each stripe was a different  
kind of rock.

MILLIONS OF YEARS AGO,  
THESE ROCKS WERE  
FORMED IN LAYERS.

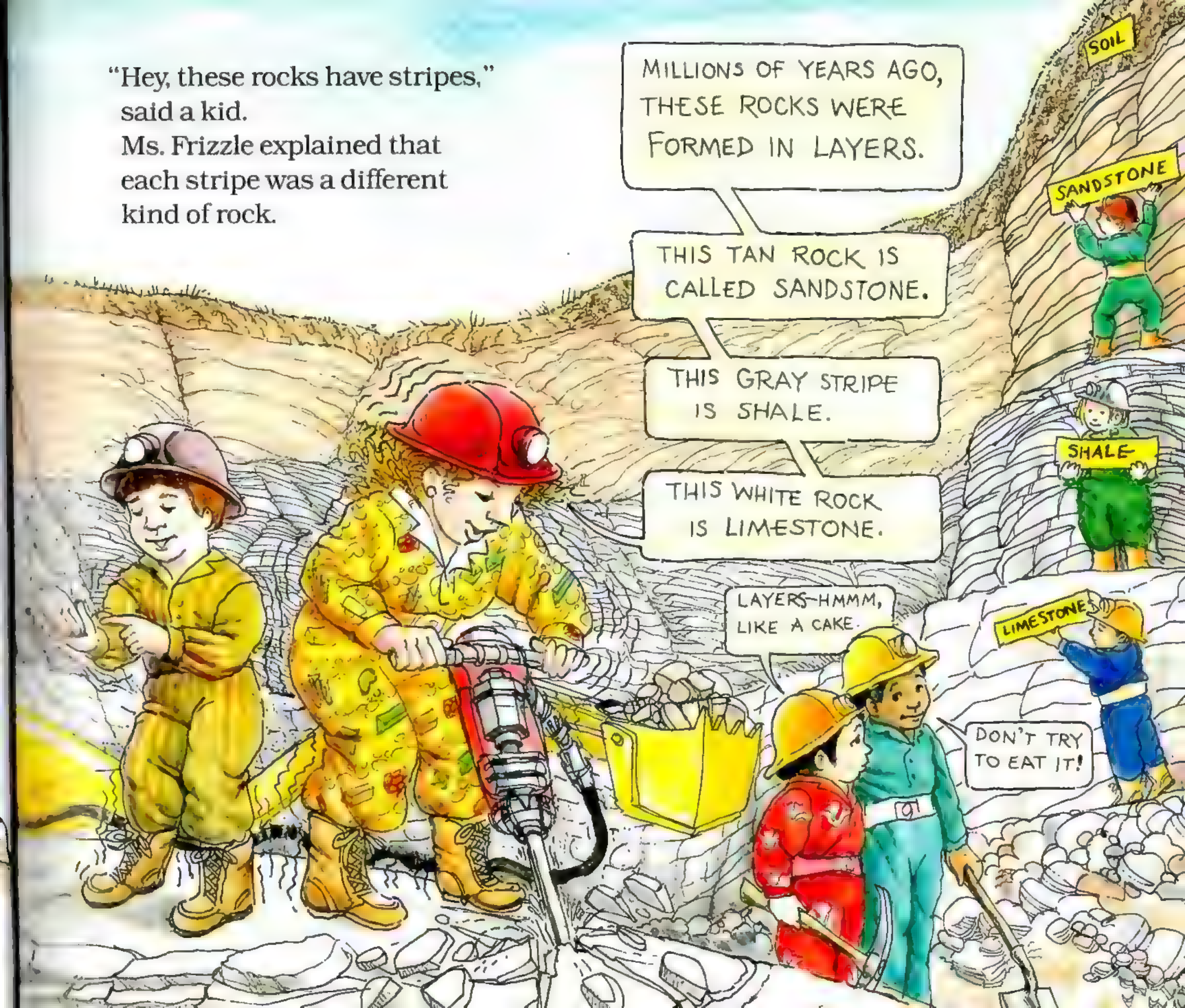
THIS TAN ROCK IS  
CALLED SANDSTONE.

THIS GRAY STRIPE  
IS SHALE.

THIS WHITE ROCK  
IS LIMESTONE.

LAYERS-HMMM,  
LIKE A CAKE.

DON'T TRY  
TO EAT IT!





## HOW ROCK LAYERS

WERE FORMED  
by Molly

Millions of years ago,  
wind blew dust and sand  
into lakes and oceans.

The dust and sand  
settled to the bottom in  
layers called sediment.  
Seashells formed layers  
of sediment, too.

Over time, the layers  
hardened into the sedimentary  
rock we see today.

AN EARTH SCIENCE WORD  
by Dorothy Ann  
Sedimentary comes  
from a word that  
means "to settle".

We chipped off pieces of the rocks  
for our class rock collection.

"These rocks are called  
*sedimentary* rocks, class,"  
said Ms. Frizzle.

"There are often fossils  
in sedimentary rocks."

SANDSTONE IS MADE  
OF GRAINS OF SAND  
ALL PRESSED TOGETHER.

SHALE IS MADE OF  
MUD AND CLAY  
ALL PRESSED TOGETHER.

SANDSTONE  
FEELS  
GRAINY.

THIS SHALE HAS  
A FOSSIL OF A  
LEAF IN IT.





THIS LIMESTONE  
HAS A FOSSIL OF  
A SEASHELL IN IT.

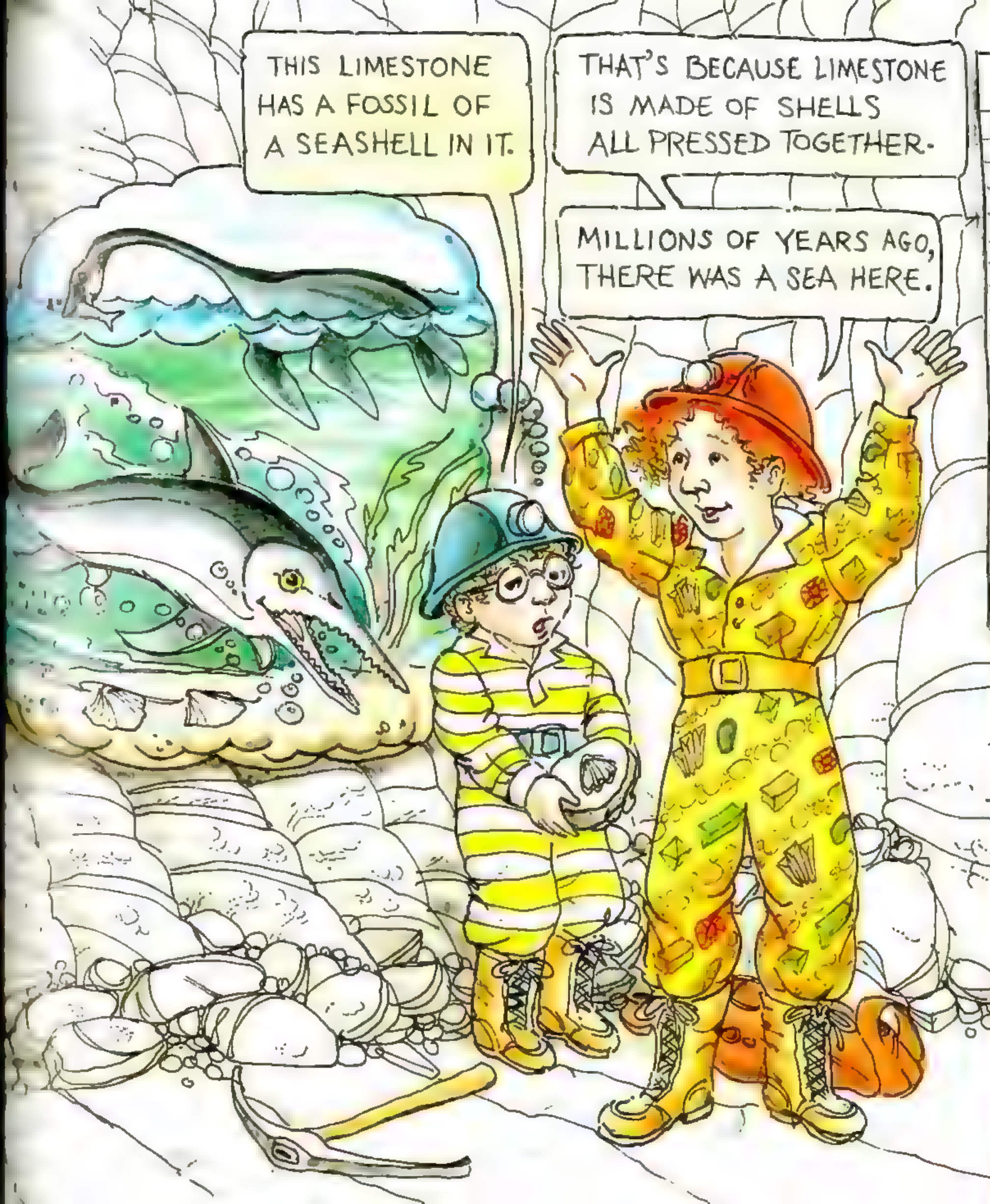
THAT'S BECAUSE LIMESTONE  
IS MADE OF SHELLS  
ALL PRESSED TOGETHER.

MILLIONS OF YEARS AGO,  
THERE WAS A SEA HERE.

## WHY THERE ARE FOSSILS IN ROCK LAYERS

by Phoebe

Sometimes a prehistoric  
plant or animal died  
and was buried in layers  
of mud, sand, or  
crushed shells. Then  
it turned to rock along  
with the layers. It  
became a fossil.








I'LL NEVER  
GET USED  
TO THIS.

Wouldn't you know it?  
Just when we were finding  
lots of fossils,  
Ms. Frizzle said,  
"Back on the bus, kids."  
Then, as we were driving along,  
we heard rock crumbling underneath us.  
Down we went.  
Everything was pitch black.  
And we were falling, falling, falling!





CLASS, WE'RE NOW GOING  
DEEPER INTO THE EARTH.

I'D RATHER BE  
GOING BACK TO SCHOOL.  
(I CAN'T BELIEVE I  
SAID THAT!)

WE'RE FALLING!

HELP!

WAA-AA



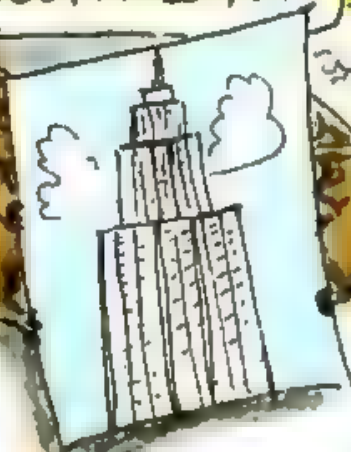
We landed with a bump.  
Ms. Frizzle switched on the headlights.  
We had fallen through a hole  
into a huge limestone cave.  
“Rain water has been dripping down  
through the earth for ages,”  
said Ms. Frizzle.  
“The water wore away this cave  
in the rock.”

THIS WHOLE CAVE IS  
MADE OF LIMESTONE.  
CAN YOU FIND MORE  
FOSSILS HERE?

HERE'S ONE,  
MS. FRIZZLE.

KNOCK IT OFF!

THE EMPIRE STATE  
BUILDING IS MADE  
OF LIMESTONE, TOO.





We wanted to stay for a while,  
but suddenly, the bus sprouted a drill.  
It started boring through the rock.  
Frizzie shouted, "Follow that bus!"  
And down we went.

# How STALAGMITES AND STALACTITES ARE FORMED

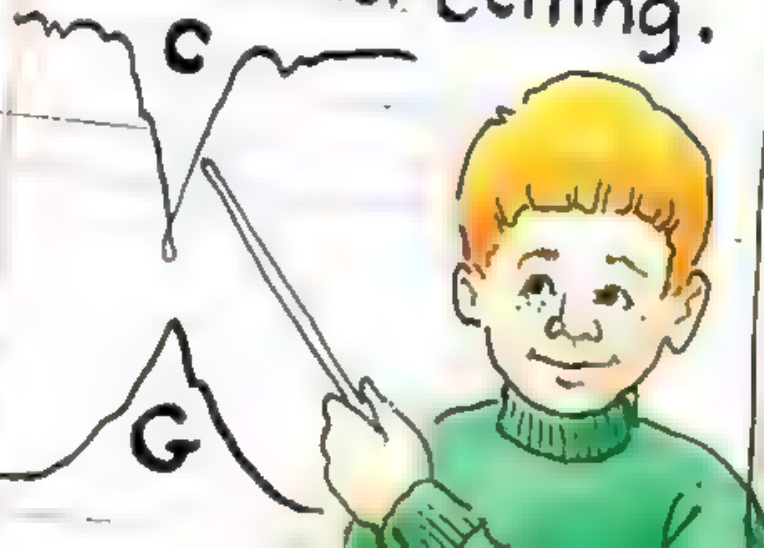
by Phil

Shapes that look like  
cones and icicles  
are formed in caves  
by dripping water  
that contains tiny  
invisible bits of  
limestone.



## HOW TO REMEMBER WHICH IS WHICH:

The word stalagmite  
has a 'g' for ground.  
The word stalactite  
has a 'c' for ceiling.



LOOK! A STALAGMITE  
GROWING FROM  
THE GROUND...

AND A STALACTITE  
HANGING FROM  
THE CEILING!



○ ANOTHER  
EARTH SCIENCE WORD  
by Dorothy Ann

○ Metamorphic comes  
from a word that  
means "to change."



○ I DIDN'T KNOW  
ROCKS COULD  
CHANGE.

IT TAKES  
MILLIONS  
OF YEARS.

The farther down we went,  
the hotter it got.

The rocks were harder, too.

"These are rocks that were changed  
from one kind to another kind  
by heat and pressure,"  
explained The Friz.

"Rocks that were changed  
are called *metamorphic* rocks."

THIS BEAUTIFUL  
MARBLE USED TO  
BE LIMESTONE.

THEY MAKE  
STATUES  
OUT OF  
MARBLE.





LIMESTONE + HEAT + PRESSURE + TIME = MARBLE

THIS ROCK USED TO BE SHALE.  
IT WAS CHANGED TO SLATE.

SLATE IS HARDER  
THAN SHALE.

THIS ROCK  
IS VERY HARD.

KNOCK  
KNOCK

CUT IT  
OUT!



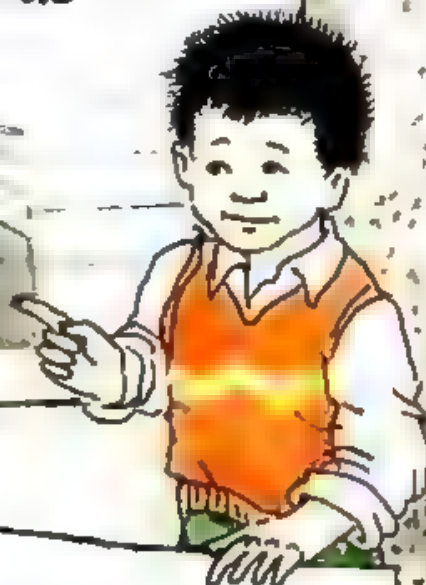


# HOW IGNEOUS ROCKS WERE FORMED

by Michael

Melted rock can push up through cracks in the earth's crust.

- When the melted rock cools and hardens, it is called igneous rock.



We went down even farther toward the center of the earth.

We hit rock that was formed billions of years ago from a pool of melted rock under the earth's surface.

Rock like this is called igneous rock.

THIS IGNEOUS ROCK IS CALLED GRANITE. MANY BUILDINGS AND MONUMENTS ARE MADE OF GRANITE.

ARNOLD, WILL YOU CARRY THESE SAMPLES?

EARTH SCIENCE IS HEAVY MAN.

## STILL ANOTHER EARTH SCIENCE WORD

by Dorothy Ann

Igneous comes from a word that means "fire".

- The heat inside the earth is like fire. It can melt rocks.

I NEVER KNEW ROCKS COULD MELT!





We had dug all the way  
through the earth's crust.  
It was so hot now  
that Ms. Frizzle told us to  
get back in the bus.

WE'RE LUCKY  
THE BUS IS AIR-  
CONDITIONED.

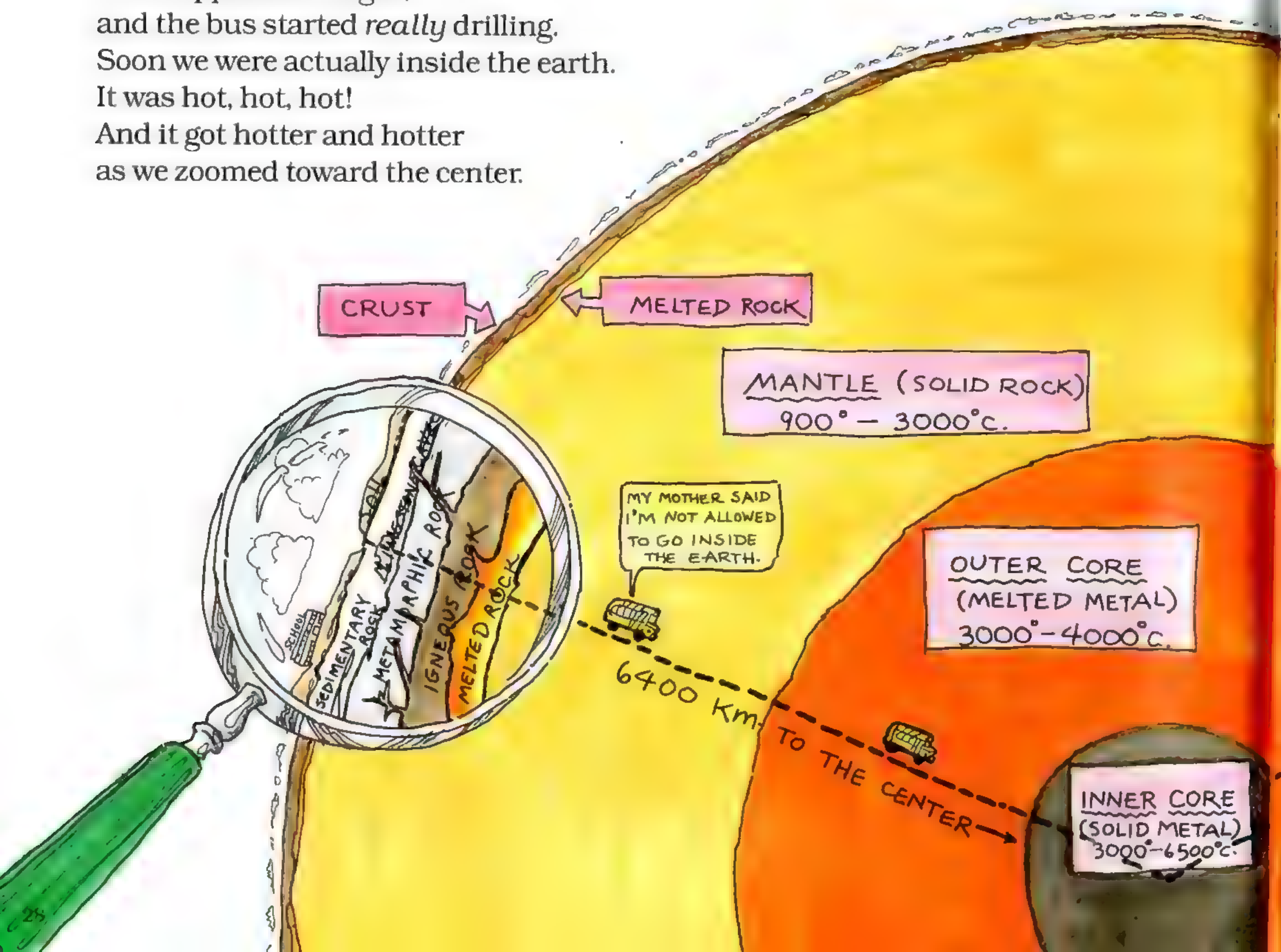
WHAT IS YOUR  
FAVORITE ROCK?

ROCK 'N'  
ROLL!





She stepped on the gas,  
and the bus started *really* drilling.  
Soon we were actually inside the earth.  
It was hot, hot, hot!  
And it got hotter and hotter  
as we zoomed toward the center.

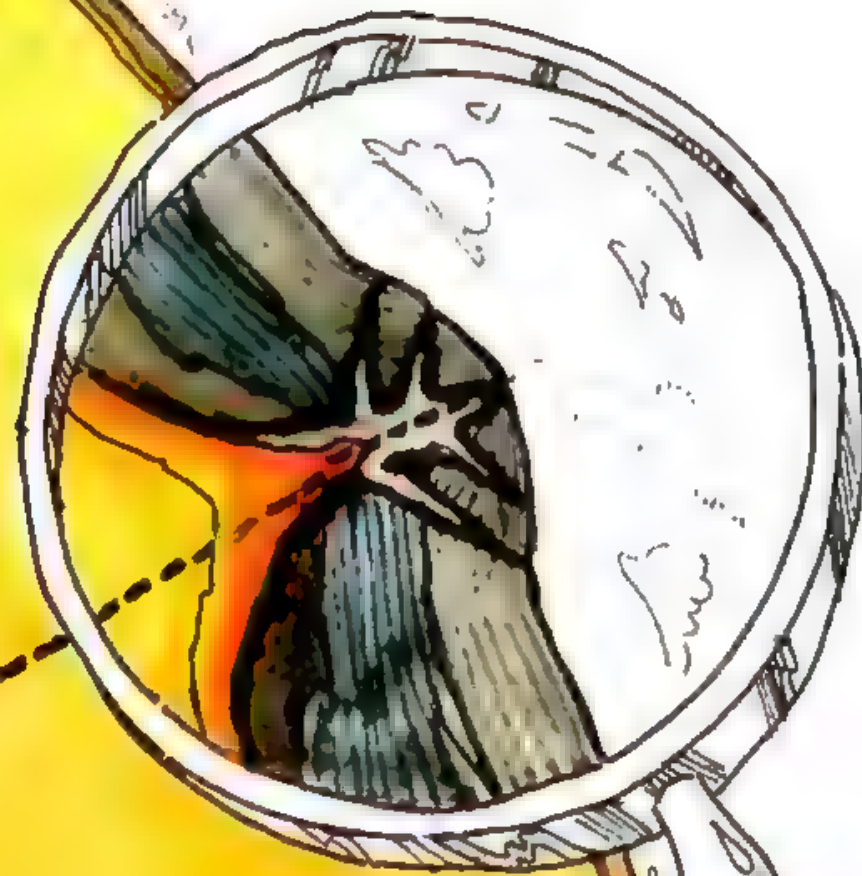




We were glad when Ms. Frizzle  
headed out again.

We reached the earth's crust  
and drove straight up through  
a tunnel of black rock.

It was great to see the sky.



### WHAT IS INSIDE THE EARTH by Ralph

Under the earth's crust  
there are pockets of  
melted rock. Below this  
is the mantle, made of  
solid hot rock.

The outer core is  
liquid metal and the  
very center of the  
earth, the inner core,

is a ball of solid metal.



WHAT IS A VOLCANO?  
by Rachel

I WANNA  
GO HOME!

A volcano is an  
opening in the earth's  
crust where melted  
rock can flow out.

Volcanoes come in  
different shapes:

CINDER  
CONE  
VOLCANO

COMPOSITE  
VOLCANO

SHIELD  
VOLCANO

ARE MS. FRIZZLE  
AND THE KIDS ON  
A CINDER CONE,  
A COMPOSITE VOLCANO,  
OR A SHIELD VOLCANO?

Then we looked around.  
We had come out on an island  
in the middle of the ocean!  
"Isn't this wonderful, class?"  
said Frizzie.  
"We've driven right up  
on a volcanic island!"  
It didn't look like much.  
But if Ms. Frizzle was right,  
the whole island was one big volcano!





THE BLACK ROCK  
WE'RE WALKING ON  
IS BASALT.

THIS SHINY  
VOLCANIC GLASS  
IS OBSIDIAN.

HEY! THIS  
ROCK FLOATS!

THAT'S PUMICE.  
AIR BUBBLES INSIDE  
MAKE IT THE LIGHTEST  
ROCK THERE IS.

I HEAR  
RUMBLING!

IS THAT YOUR  
STOMACH, ARNOLD?



We were nervous, but Ms. Frizzle made us collect some rocks. She said they had all hardened from melted rock that had come out of the volcano. Then, suddenly, we heard rumblings from below.



VOLCANOES MAKE  
NEW LAND

by Arnold

The material that comes  
out of a volcano is  
melted rock called lava.  
When lava cools, it  
hardens into new rock.  
In time, soil forms  
on the rock and plants  
can grow.


I DIDN'T KNOW  
VOLCANOES  
COULD BE USEFUL!

We scrambled into the bus.  
The Friz turned the ignition key  
and stepped on the gas.  
Nothing happened.  
The bus would not start!  
We thought we were goners!





Red-hot lava came streaming  
out of the volcano.  
Some of it shot into the air  
like a fountain.  
Some of it flowed over the land  
like a river.  
Our bus went along with it—  
right into the sea.



CLASS, WHEN THIS LAVA HARDENS,  
IT WILL BE THE NEWEST ROCK  
ON EARTH.

WHO CARES?  
JUST GET US  
OUT OF HERE!

HISSESSSS  
HISSESSSS  
HISSESSSSSS



When the red-hot lava hit the water,  
it made a huge cloud of steam.  
All we could see was white.  
We seemed to be rising  
with the steam and floating along.  
No one knows how long  
we floated in the cloud...



WHERE ARE WE?

I DON'T KNOW,  
BUT I HAVE TO BE  
HOME BY 3:30.



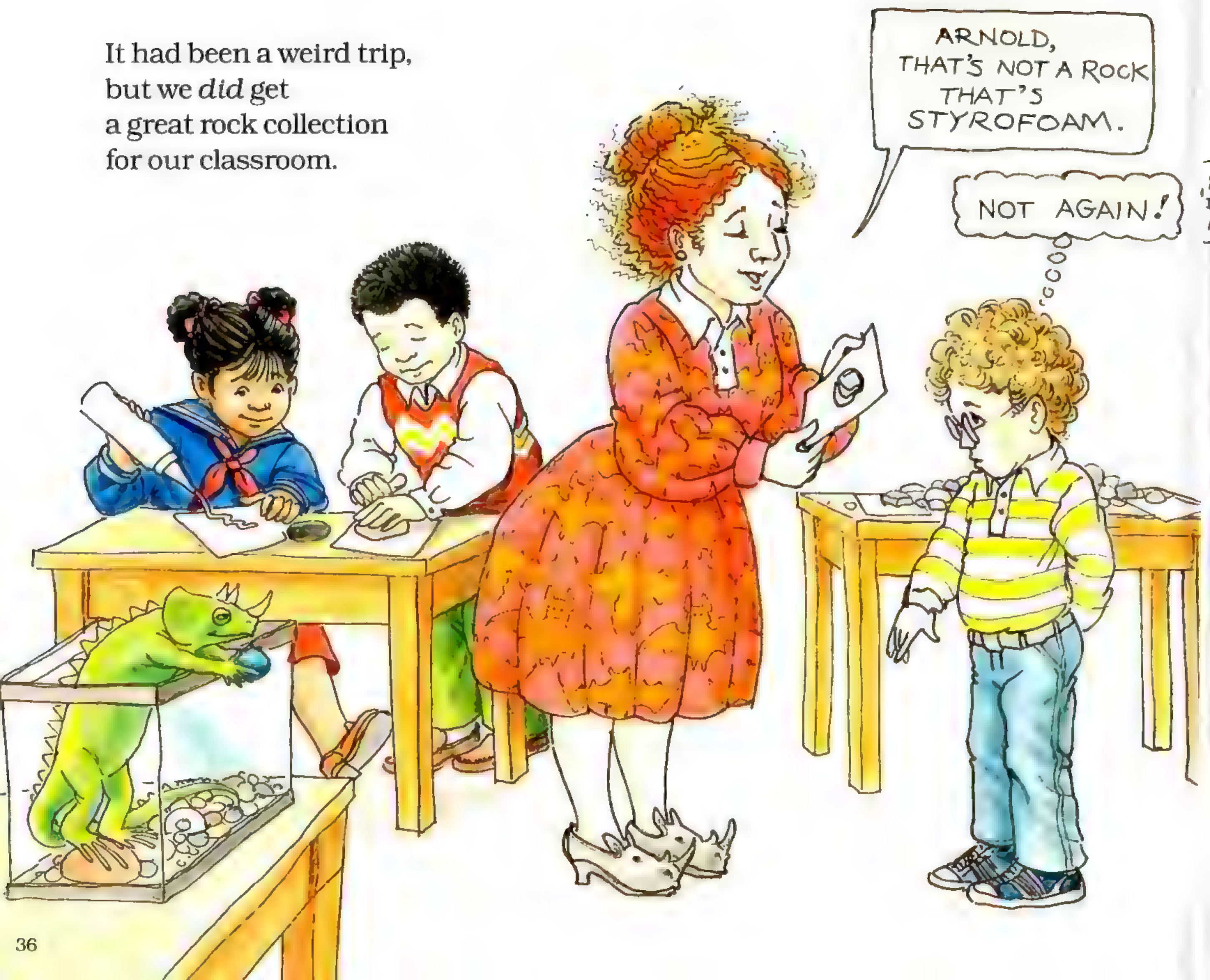


but when it finally cleared,  
we were back in the school parking lot.





It had been a weird trip,  
but we *did* get  
a great rock collection  
for our classroom.



ARNOLD,  
THAT'S NOT A ROCK  
THAT'S  
STYROFOAM.

NOT AGAIN!



# Rock Collection

by MS. FRIZZLE'S  
CLASS

HEY!  
I'M NOT  
A ROCK!



## SHIRLEY'S ROCK LIMESTONE



TYPE: Sedimentary  
(formed from shells)

USES: Buildings,  
chalk, cement,  
fertilizer

## Amanda Jane's rock MARBLE



TYPE: Metamorphic  
(formed from limestone)

USES: Statues,  
monuments, buildings

## Phoebe's rock SHALE



TYPE: Sedimentary  
(formed by mud)

USES: Ground up and  
mixed with limestone  
for cement, brick

## Wanda's rock GRANITE



TYPE: Igneous

USES: Monuments,  
buildings, curbstones

## JOHN'S rock SLATE



TYPE: Metamorphic  
(formed from shale)

USES: Roofing tile,  
flagstones, chalkboards

## Michael's rock SANDSTONE



TYPE: Sedimentary  
(formed by sand)

USES: Buildings,  
grindstones

## MOLLY'S rock BASALT



TYPE: Igneous  
(Volcanic)

USES: Road Building

## Rachel's rock OBSIDIAN



TYPE: Igneous  
(Volcanic)

USES: Decoration,  
Indian Arrowheads

## Florrie's rock PUMICE



TYPE: Igneous  
(Volcanic)

USES: Ground-up in  
scouring powder

## Phil's rock QUARTZITE



TYPE: Metamorphic  
(formed from  
sand stone)

USES: Millstones for  
grinding grain,  
road building





## A WORD WITH THE AUTHOR AND THE ARTIST

The first reader of this book called to complain. He said the book was full of mistakes. We recorded the conversation to help you decide which things are true and which were put in to make the story more exciting.

READER: This book is full of mistakes!

AUTHOR: It is not!

ARTIST: Everything in this book is absolutely true and really happened.

READER: What about the beaver lodge on page 7?

AUTHOR: Oh, that. Well, I guess that *would* be too messy in a real classroom.

READER: And the beehive?

ARTIST: That, too. But everything else is fact.

READER: Oh, come on! You mean kids can use jackhammers (page 16), and a bus can change into a steam shovel (page 14) and a drill (page 23)?

AUTHOR: Well, er, now that you mention it, that is not really possible.

READER: And do you expect me to believe that a bus can go through the center of the earth (page 28)?

ARTIST: Yes....

AUTHOR: Maybe....

ARTIST: Well, actually, no. The bus couldn't do that, either.



AUTHOR: Even if a bus *could* drill its way through, the distance is so long that the trip would take months, even years.

READER: And what about the heat?

AUTHOR: Okay, okay! It's white-hot in the center of the earth. The bus would be burned up in a minute.

READER: Isn't it kind of ridiculous to say that air-conditioning would help?

AUTHOR: Gee, you're a tough cookie! Okay, you're right. Air-conditioning could not make any difference in that kind of heat.

READER: And the bus could not flow in lava and go up in a cloud of steam (pages 33-34)?

ARTIST: Give us a break! You're right again. That's not true, either.

READER: But you said *everything* was true!

AUTHOR: Everything *else* is. Honest!

READER: Everything else is true? There truly are sedimentary, metamorphic, and igneous rocks?

AUTHOR: Certainly!

READER: And lava really does harden into new rock?

ARTIST: Oh, yes.

READER: And what about Ms. Frizzle's clothing?

AUTHOR: That *is* hard to believe, but it's true.

ARTIST: She really does dress that way!





## HOW TO SAY OUR NEW EARTH SCIENCE WORDS

basalt  
(buh-SAWLT)

granite  
(GRAN-it)

igneous  
(IHG-nee-uhs)

lava  
(LAH-vuh)

metamorphic  
(met-uh-MAWR-fik)

obsidian  
(ahb-SIHD-ee-un)

pumice  
(PUHM-ihs)

quartzite  
(KWAWRT-site)

sedimentary  
(sed-uh-MEN-tar-ee)

stalactite  
(stuh-LAK-tite)

stalagmite  
(stuh-LAG-mite)

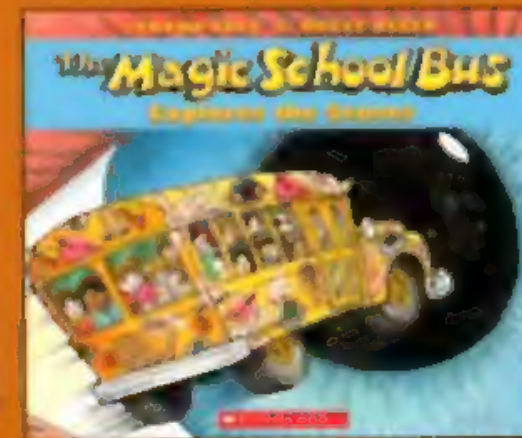
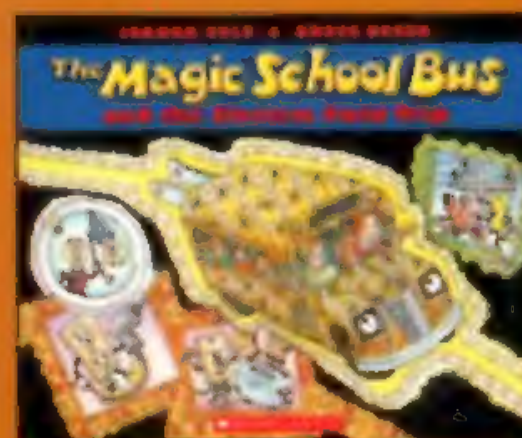






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BESTSELLING  
SCIENCE SERIES  
EVER!**



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